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ABSTRACT

This paper traces an educator's experiences with computers over a span of 20 years, and describes the computerization of and concomitant obstacles faced by the Humanities department at the American University in Cairo, Egypt (AUC). The computerization of AUC began in the 1980s, with workstations mainly in the science, math, engineering, and administrative units; the English Language Institute was equipped with one terminal and an incompatible printer. In 1993, the Humanities department obtained a grant for a locally networked lab with Macintosh computers and began to teach students in composition classes to use word processing. Many obstacles impeded the success of the computer classroom, including improper facilities and students' lack of computer and keyboarding skills. In 1994, AUC achieved Internet connectivity. As demand for Internet support increased, and new computer labs were begun in non-technical departments, faculty learned to teach themselves and rely on each other for technical support and ideas. In two years, even the "non-hacking" faculty became technology-aware if not technology-dependent. The Internet is now the source for technical support and the link with the rest of the academic world. The Humanities department writing classroom was updated in 1994 with proper wiring, lighting, and air-conditioning. One educator is responsible for running the center in addition to her teaching workload. The department and school continue to face difficulties related to lack of resources and lack of ability to "catch-up" and engage in strategic planning involving the future of technology. (SWC)

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BACK TO THE FUTURE: HELP! IT WAS 20 YEARS AGO, AND WE'VE ONLY JUST ARRIVED!

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ABSTRACT

A Third World Humanities department enters the '70s in the mid-'90s. An English Instructor (concept of network being a Mac and printer) is reborn as "Renaissance Geek", LAN administrator, and alpha-tester of SLIP emulations for UNIX. The Internet arrives, and campus computing (largely ignored for the past two decades) erupts in massive overwork, turf wars, and power plays. The Provost and VP for Computing wonder why they can't dial in. Committees are formed. Restructuring abounds. People want long-range plans, preferably ones that take us into 2001 on a 1984 budget. The Hackers strike back, winning some battles...

THE SPIRIT OF FUTURE PAST...

In 1971, after two years of the post-college disillusionment typical among '60s English grads, I set off for Boston in my '59 VW bug. It was a long drive, but I was sure it would be more like college there than in Akron, Ohio. After about three weeks of job-hunting, I was down to my last $50, and my prospects seemed pretty grim. In that realm of the educated, with PhDs driving cabs and tending bar, nobody wanted to hire a female English B.A., overqualified for secretarial work, underqualified for everything else, and too clumsy and temperamental to wait tables. One day, my employment agent phoned, saying, "Get on over to MIT right away--they *want* a college grad!" I flew across the bridge to Cambridge on my ratty bicycle, looking equally ratty myself (Janis Joplin hair, kangaroo-print hot pants outfit) and reached the upper floors of 545 Technology Square, home of the Artificial Intelligence Laboratory. I still remember details about that day 25 years ago, including everybody's names, but this is a just a summary of events that set the stage for my future with computers.

Following some informal screening, I was introduced to a guy called Marvin Minsky. We chatted a bit, and he asked me how I felt about computers. I told him I didn't feel *anything* about computers, as I'd never seen one. I then spoke to another guy called Seymour Papert, who asked about my fear of elevators and wondered why it didn't carry over to a fear of flying. I hadn't thought

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about that, but promised to do so. Back in the main office a few minutes later, somebody came and asked me if I could start the next morning, which of course I could. They'd hired me on the spot, hot pants and all, for no particular reason that I could see--I still didn't get what they were doing or what my job exactly was, although I had a title: "Group Secretary". When I showed up the next day, I was shown into "my office" and introduced to "my computer". I must have asked something like, "What do I do with it?", and was told "Oh, yeah--the instructions are in the top right-hand drawer". (As I recall, the "instructions" consisted of a few printed pages telling me how to log in to the PDP10 and communicate with it in BASIC.) So I did what it said.

I only spent about a year and a half there, but it was more than enough to permanently immunize me against technophobia. I learned that "computer nerds" were interesting people doing interesting things. Most importantly, I was back in academia again! These folks treated me like a college graduate and didn't *care* that I'd majored in English and hadn't had any math since tenth grade. They explained what they were doing (or trying to do), unconcerned that most of it went straight over my head. They took me to lunch with them and invited me to their parties. I was a colleague, not an "office girl". Never mind that much of my time was spent photocopying and "typing"--I would get engrossed in the project (LOGO, ELIZA, VISION, SHRDLU, or whatever) and *forget* I was doing the grunt work I'd gone to college to avoid. When I left, they gave me a farewell party, a sleeping bag, a burgundy leather vest with silver buttons, and a card signed by all the people who were later to be immortalized in Steven Levy's _Hackers_. I "outgrew" the vest but still have the card and the sleeping bag.

BACK TO 1984...

My next decade had nothing to do with computers. But then I found myself here in Cairo trying to come up with a topic for an M.A. thesis in Teaching English as a Foreign Language. Suddenly, remembering the work of Terry Winograd and others, I became curious about the relevance of AI research to language learning, so I wrote my proposal about that. None of the graduate faculty here felt prepared to advise such a project, but they reluctantly agreed to support me if I could do the research. In January 1984, I traveled to the U.S. for that purpose, only to find that the sources I needed were either still "classified" or would cost hundreds of dollars to get copies of. To really do this project, it seemed, I'd have to spend a year or more digging through files at Stanford, Carnegie-Mellon, and MIT. I was told this was post-doctoral research. So I gave up, switched to the "comprehensives" option, and re-worked my thesis proposal into an independent study paper.

By this time, AUC had already begun to computerize. We had a campus computing center and a few workstations around, mostly in the science, math, engineering, and administrative units. There were a few computer scientists among the faculty. We'd even acquired a terminal and printer for the English Language Institute, where I was doing my graduate work, and some of us were enthusiastically teaching ourselves WordStar. The only trouble was, they'd given us an incompatible printer, and so we couldn't print out anything we wrote. Once I needed to do a statistical analysis for one of my course projects. It was supposed to be a simple one, but my design required an "analysis of variance". My professor borrowed a cassette tape with the statistics package and instructions, but the only computer that could run it was in the Math Department. I got permission to use it, but nobody could show me *how*. There was no manual, and I didn't even know what

system it was running--not that it would have helped much. I was entering data for about 150 students, which took time. If I made a command line error, the system would freeze, and I'd have to reboot and start all over again. I lived in the Math Department for about three solid days before finally getting the data entered and the analysis run.

After several such experiences, I abandoned computing for several more years while the PC market and AUC's hardware purchasers got their acts together. It was 1990 before I bought my own PC--a laptop with no hard drive--and was finally able to crank out a few memos, course materials and song lyrics. But I was still pretty frustrated with the DOS user interface and heartily wished myself back in 1971 with the PDP10. In 1993, I sold off the laptop in favor of a used Mac. It went straight from car to closet, as I was heading off for summer leave, but in September I dragged it out, set it up, and finally started getting some real work done. The DOS-to-Mac switch was painless--I missed my "home" and "end" keys, but at least the Mac could make its printer behave. Compared to the PC, it was almost a PDP10!

THE RENAISSANCE...

In Fall 1993, few at AUC had given much thought to the idea of using computers for instruction in the Humanities. Several faculty had PCs or Macs, but that was about it. We'd get the Academic Computing newsletters with all sorts of foreign terms like EARN/BITNET and DOBIS/LIBIS; most of us threw these straight into the circular file. By now, as a result of institutional expansion and restructuring, AUC had a Computer Science major, several public access labs as well as specialized departmental ones, and even a small lab run by the Technical Support Coordinator for the School of Humanities and Social Sciences. But all these were located on other parts of the campus, so we tended to forget about them.

That September, Dr. Thomas Lamont, an Associate Professor of Literature, became our Writing Program Director. He was an avid and experienced Mac user, and through his efforts, our Department obtained a grant for a locally networked Mac lab. To brainstorm ideas for our Writing-Lab-to-be, Tom formed a "computer committee" of faculty who were interested in the idea of teaching with technology or who had already made intrepid forays with their students into AUC's public access labs. Having successfully used my own Mac for a month or so, I volunteered for the committee, hoping to breathe new life into my composition courses, which by the tenth year were becoming rather stale. I'd noticed that my own writing had already become more productive (and in my opinion, better). Also, my writing *strategies* seemed to have changed, and I was curious to see what implications all this would have for our student writers.

Eighteen Macs and four StyleWriter II printers arrived during semester break but just sat around in boxes, because we didn't have any furniture, and the "lab"--a tiny former seminar room--had only a couple of power outlets (although it did have a balcony and a working fireplace). I was dying to open those boxes and get that network set up and get my writing classes into that lab so they could write faster, drag and drop, cut and paste, and use cool fonts like I was doing. Gone would be the days of formal outlining, sloppy handwriting, spelling/grammar mistakes, and mindless revisions. The students would find writing and revision so much easier that they might actually *do* more of it. Most of them were Engineering, Computer Science, and Business hopefuls. Although English was "out", technology was "in", and combining the two might encourage

them to think positively about the Core requirements and Liberal Arts in general. That was my theory, anyhow.

By mid-March, we managed to set up a lab of sorts with some ancient tables and chairs from Stores and a jungle of multiple outlets and extension cords that everyone kept stumbling over. The Apple vendors came in and set up the network, sort of, and installed the software, sort of, and my "electronic classroom" was born. I say "my", because nobody else seemed all that enthusiastic about teaching in it yet. Not only did it look like _2001_ being played out on a stage set from _Oliver!_, but it was truly an ergonomic nightmare: everything the wrong height, glary lighting, direct sunlight, wires all over the place. Things kept coming unplugged, and I'd often get a jolt when trying to reconnect them (220 volts, no grounding, no main switch). It was nearly impossible to figure out what was connected to what--one day a girl set her tote bag down on a cable, knocking out the power to six of her colleagues' stations across the room. The floor was covered with lumpy static-laden carpeting. Cairo dust filtered through the warped old French doors and windows. Stray cats would wander in. More than once, in the morning, I saw a cockroach crawl out of one of the floppy drives. Printing to the StyleWriters took forever, and they kept jamming because everybody would put the paper in wrong. Some of our software included old System 6 programs that crashed with System 7. In the absence of any supervisory staff or security software, much time was spent dragging the System and Application folders out of the Trash and throwing away millions of untitled folders. No two desktops ever looked the same.

In spite of all, our Mac-literate faculty and English majors took to the lab immediately and began to crank out syllabi, papers, and theses. My freshman composition students, too, were generally positive about using the computers and quickly mastered the basics, but there were some unforeseen difficulties. Few of them knew how to type. The grammar checkers couldn't cope with their fractured sentence structures and misplaced punctuation, and they would make *every* change suggested by the spelling checkers, even to their own names. This resulted in some rather odd pieces of writing at first. In the end, though, quite a bit of learning took place in our makeshift lab during that trial semester. The students' progress was encouraging, and my *own* was exponential, I thought. After only five weeks in the world of computer writing (and with no theoretical grounding in the field), I had already arrived at these sweeping conclusions:

> It is relatively easy to introduce students to word processing in a non- threatening way, but only if the instructor himself does not feel threatened by it.
>
> Students in general write *at least* as well on a computer as they do by hand, but they find the process frustrating unless their typing is faster than their handwriting.
>
> Word processing seems to change the way in which we view and manipulate text. Writers adjust to this in various ways depending upon prior experience and individual differences.

We still understand very little about thought processes and writing strategies, and even less about how these relate to word processing. As this knowledge becomes available, we must incorporate it into our teaching in order to prepare our students for the 21st Century.

ENTER INTERNET...

On 5 April 1994, the AUC community received a memo from Dr. Mona Kaddah, Director of our Academic Computing Center. It began: "It is with utmost pleasure that I announce that full Internet connectivity has been achieved at AUC! The connection became operational at precisely 12:30 p.m. today. We have managed to overcome many problems and delays, going to great lengths to introduce the Internet to AUC in as short a time as possible. In doing so, we become the third Internet node in Egypt, and that includes FRCU, the Foreign Relations Coordination Unit, which is the national node in Egypt."

That didn't mean much to me at the time. I was busy preparing a symposium presentation for that weekend, hard at work with my classes in the lab, and making arrangements to leave in mid-May for the Tenth Computers and Writing Conference in Missouri. But sitting there at C&W, blown away by all the post-modern theory, interactive software, hypermedia presentations and glitzy web pages designed by fifth graders, I overheard remarks like, "Hey...remember back in 1984 when we were wondering about using word processing in the composition classes?" I was floored. Our "futuristic" program had *just made it* to everybody else's 1984!!! I decided we'd better downplay word processing, get ahold of some interactive software, and start paying attention to the Internet. Actually, I soon found it written into my job description, as the Writing Lab was to be expanded and renovated over the Summer and, we presumed (wrongly), connected to the campus backbone. Our Assistant Director, Lammert Holdijk, and I were among the first to sign up for Internet training.

In Fall 1994, Computing Services hosted an "Explore the Internet Fair", which introduced us to all the graphical glories of cyberspace. By then many faculty had e-mail accounts and modems, but most of us were (and still are) battling with "dumb" VT terminals, VAX/VMS commands, Lynx, Kermit, and glitchy dial-up connections. The computing staff, ignored for years and unknown to most faculty, were suddenly swamped with requests for training and support, while already working overtime just to keep the system up and handle the traffic. Some of us got to know them pretty fast, and they turned out to be great, helpful folks, but there was a *serious* language barrier that had nothing to do with Arabic or English. What we had were a few highly specialized experts trying to deal with a huge population of newbies. These mainframe specialists, programmer/analysts, network managers, and resource administrators were unprepared for our total cluelessness, and even their basic training sessions were well over many people's heads. We'd phone and say, "I'm having such and such a problem," and they'd say, "That's a datacompressioncommandlineprotocol privilegeviolationfatallynx error--just type <set port telnet profile binary>." They knew what to do, and they wanted to help us, but they didn't yet know how to "dumb down" the *concepts* for people who understood DNS as a type of genetic code and <nobroad> as a sexist slur. We almost drove each other crazy.

"RENAISSANCE GEEKS"...

As demand for Internet support increased, and new labs began to spring up in non-technical departments, a funny thing happened--we faculty actually had to learn some things for ourselves! Gradually, a new interdisciplinary breed of mid-level Hackers emerged. Not only did we get to know the computing staff and start treating them with some respect, but there was a visible shift in the overall dynamics of the AUC community. Most people used to hang out with others in their own

or related fields, but now any given group in the Faculty Lounge might consist of faculty from various disciplines, and maybe even some administrators and interns. More often than not, the topic of conversation would have something to do with computing. Lab managers, whether in English or Engineering, would discuss lab policies and software. Web surfers, whether in Philosophy or Biology, would exchange URLs. And *everybody* would grumble about the VAX/VMS commands and the dial-up lines. But the end result was that we started sharing our bits of knowledge with each other. And because we were out of our element, we knew how to "dumb down".

One of the computing staffers came up with the idea of an "SOS" listserv, where people could post questions, and anyone who knew the answer could answer. It worked something like "playing telephone", in that most people on the list knew *something* and so could pass that on to the other list members. This took some heat off the computing staff (except for the guy who had to manually run the list), and it generally worked well. There were a few problems--sometimes wrong information got out as a result of misunderstandings or typos. Some list members would save information, but others wouldn't. A few experienced users, after giving the same advice to the same people for the hundredth time, signed off the list. For awhile, during the first year, SOS "forgot" its role as a support list and became a forum for gossip and complaints (as one lurking colleague put it, a "Virtual Faculty Lounge"), resulting in even more "unsubscribes".

Embedded in the gossip and complaints were various rumors about turf wars and power plays related to computing. Depending on whom we listened to, everybody wanted control of Internet access, from the Provost to the Management Department, to the Development Office, to the Registrar, to the PR Office. Prior to 1991, Administrative Data Processing had reported to the Chief Financial Officer, while the Academic Computing Center had reported to the Provost. In October of that year, all computing services were reorganized under an Associate Vice-President for Computing who reported directly to the President. At that time, we faculty were too involved in the restructuring of our own *academic* units to pay any mind to computing. But by 1994-95, as we became involved in global connectivity and instructional technology, several events made us aware that under AUC's current structure, Academic Computing had no official accountability to the academic community. This was scary. In Fall 1995, a new restructuring took place that put the Provost back into the picture.

Like most academics, Hackers, whether "real" or "Renaissance", tend to be more interested in getting our work done than in playing power politics. But we all realize that we have a stake in keeping information technology "academic". In two short years, even our non-hacking faculty have become technology-aware, if not technology-dependent. The Internet has become our source for tech support, our link with the rest of the academic world--and sometimes our nemesis. As I write this, I wonder if I'll get off in time to be published. At the end of February, as I was racing to make last minute changes to part of a book chapter, our DNS went down for three days, leaving a co-author with no choice but to send the incomplete draft to the editors.

SO, IS THE FUTURE NOW?

This year, demand for Internet access has escalated in all directions. Here, owing to limited telecomms services, dial-up has been a real problem all along. One weekend, finally connecting after about a hundred redials, I saw that the Provost was online and sent him an e-mail asking, "Are you

having trouble dialing in?" He wrote back, saying something like, "I'm glad you wrote--I thought it was just me!" The Acting VP for Computing has reported the same problems. Having begun with five lines, we now have 19, but they're still inadequate even for faculty and administrators. The VAX system will only support about 65 logins at a time. Access for most students seems a remote dream.

As promised, our Dickensian writing classroom was renovated during the summer of 1994. We now have 30 workstations (in a room that should hold about 15), but with proper wiring, lighting and air-conditioning, as well as static-free flooring and ergonomic chairs. The tables are all the same height (though still the wrong height), and the StyleWriters have been replaced by two laser printers. We've also managed to acquire security, filesharing, and collaborative software, along with a couple of CD-ROM players. But we still have no staff, other than myself (on part release-time/overload) and a few work/study students. I do all the software installations, network configurations, user accounts, and debugging. Our hardware, less than two years old, is already obsolete, and the warranties have run out. The workstations have only four megabytes of RAM, the Quadra 800 we use as a server has only eight, and the LocalTalk network is much too slow for the interactive applications we need to run. Ethernet cabling has finally been installed, but only one of ten promised cards has arrived. We will not have SLIP/IP connections, so I've joined one computer scientist and a few other "Renaissance Geeks" in testing emulation on a UNIX server. But even if that works, how will we run today's Internet software with four megs?

In March, at the invitation of the Provost, I participated in a brainstorming session on "High-tech Classroom Development". In April, at the request of my Dean, I attended yet another brainstorming meeting to help in presenting "department/school views about the role of technology to support education, training, research at AUC for the next 15-20 years". Under discussion at the latter meeting was a six-page plan drafted by the "Educational Technology Subcommittee of the Century Committee", outlining the various goals and objectives we might wish to pursue, along with issues of infrastructure, connectivity, and (last, as always) training and support. We all went around the room expressing our views, visions, and concerns. The last person to comment was our Technical Support Coordinator, who observed, "But all this is what others are already doing! Are we going to spend the next 15-20 years playing 'catch-up', or are we aiming to be a leader in the region?" A heavy question, indeed, for any institution trying to engage in strategic planning involving the future of technology. As yet, nobody has answered it.

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